Pesticide Stewardship Partnership Program

2015-17 BIENNIUM UPDATE

Produced by:
The interagency Water Quality Pesticide Management Team

Oregon Department of Agriculture

OSU Oregon State University

Oregon Department of Forestry

DEQ
State of Oregon Department of Environmental Quality

Oregon Watershed Enhancement Board
OWEB

Oregon Health Authority

This document briefly summarizes the actions and accomplishments of the Pesticide Stewardship Partnership (PSP) Program for the period of July 1, 2015 through December 31, 2016 approximately ¾ of the 2015-17 biennium. The information presented within this report does not include water quality data that is scheduled for collection during the spring of 2017 nor does it include data that has not yet been reviewed for quality assurance by the Oregon Department of Environmental Quality Laboratory.

The inter-agency Water Quality Pesticide Management Team (WQPMT) in collaboration with numerous local partner organizations implements the PSP Program. The purpose of this summary is to provide a status report on each of the major elements of the PSP program.

PROGRAM OVERVIEW

The PSP Program is a cooperative, voluntary process that is designed to identify potential concerns regarding surface and groundwater affected by pesticide use. Its purpose is to reduce the occurrence of pesticide residues in the states water bodies by working with local stakeholders and to provide a mechanism to share "lessons learned" with all citizens of the State of Oregon. The goal of the program is to achieve measurable environmental improvements, making Oregon waters safer for people and aquatic life.

The partnerships combine local expertise and water quality sampling results to encourage voluntary changes in pesticide use and management practices. State agencies including DEQ, the Oregon Watershed Enhancement Board, Oregon Health Authority, Oregon State University's Extension Service, Oregon Department of Agriculture and Oregon Department of Forestry work with diverse parties, including watershed and other natural resource groups, local landowners and growers, soil and water conservation districts and tribal governments to find ways to reduce pesticide levels while measuring improvements in water quality and crop management.

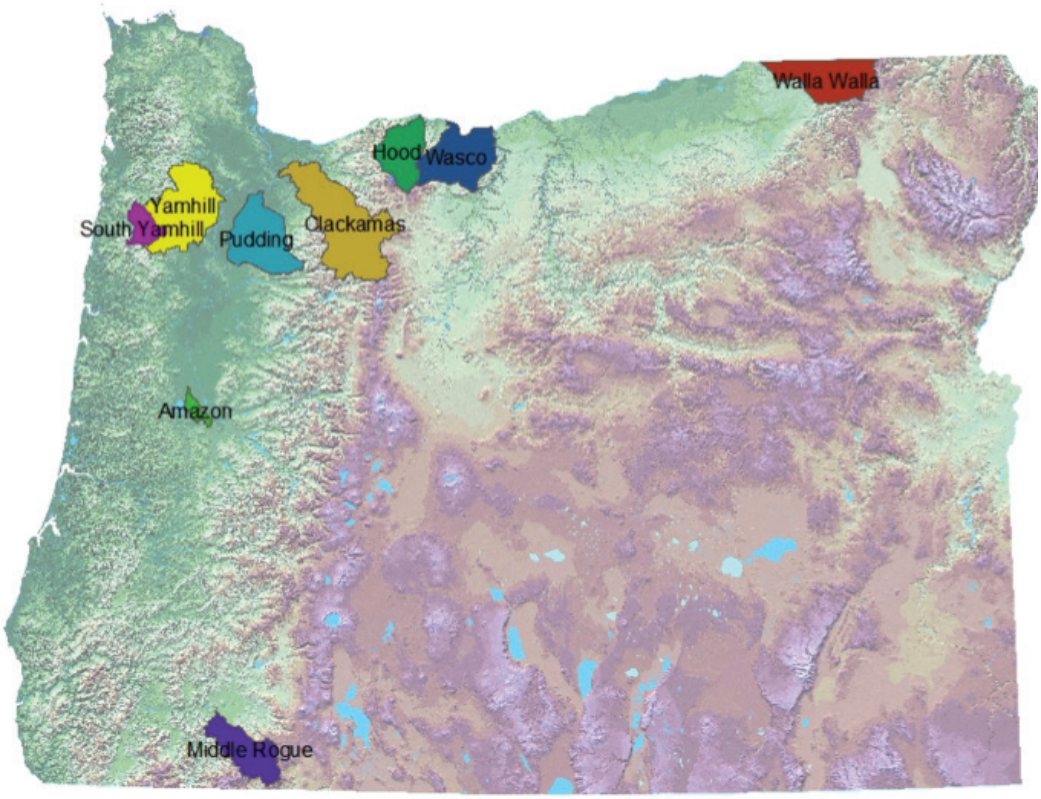
The 2015-17 budget for the PSP Program totals $1,695,009.00. Half of these funds are allocated from the Oregon legislature (General Funds) and half are derived through pesticide registration fees collected by the Oregon Department of Agriculture. The allocation of these funds is presented below in Table One.

Table One: Allocation of PSP Program Funds (2015-17)

Water Quality Analysis and Planning (DEQ)	$1,047,064.00
Program Administration (ODA)	$247,945.00
Technical Assistance Grants	$200,000.00
Waste Pesticide Collection Events	$200,000.00

Beginning in 2015, the WQPMT increased the number of watersheds participating in the program from eight to nine, adding the Middle Rogue watershed in Jackson Co. A map of currently participating watersheds is presented in Figure One.

Figure One: Currently Participating PSP Watersheds (2015-17)



Additionally, during 2014-15, three pilot areas were examined for water quality concerns. They were the, South Coast, South Umpqua, and Middle Deschutes. Two of the three pilot areas, the South Umpqua and Middle Deschutes presented results that warrant further examination. These watersheds are scheduled to participate in a phase two-evaluation beginning in the spring of 2017.

PESTICIDE MONITORING AND RESULTS

Thus far, during the 2015-17 biennium (through December 2016) 330 water samples have been collected and analyzed across the nine PSP watersheds[1]. The Department of Environmental Quality laboratory analyzed all samples collected from these watersheds. Several pesticides were added to the analytical suite from the 2013-15 biennium based on evolving use patterns employed by applicators of registered pesticides.

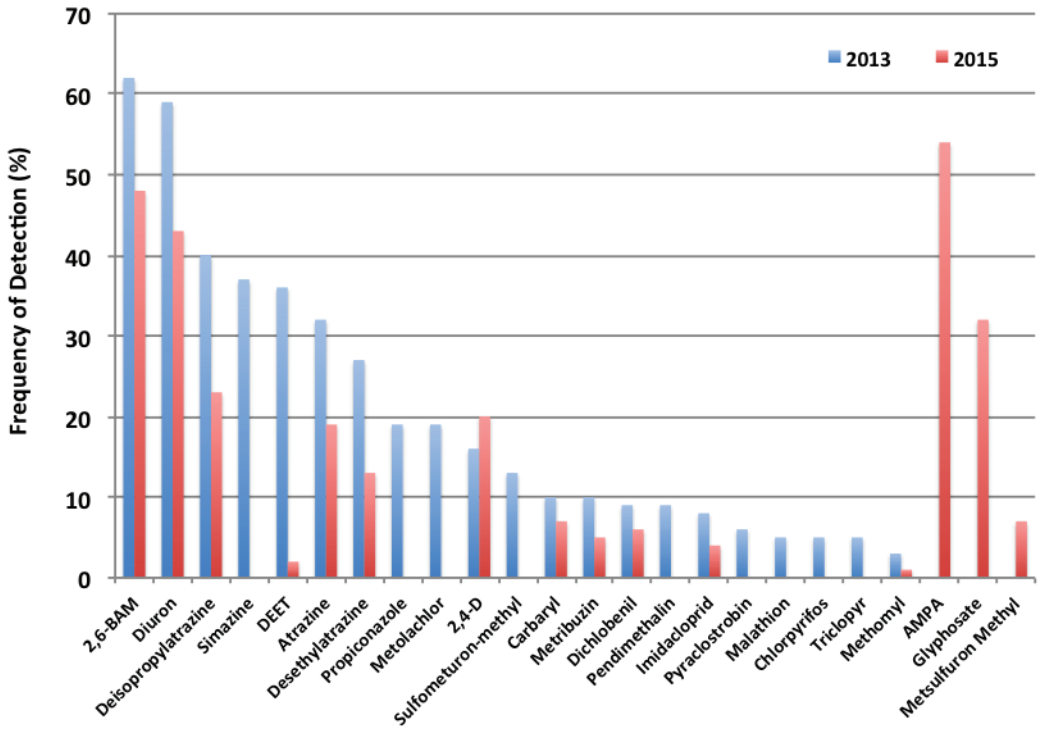
[1]An additional ~300 samples have been collected and are awaiting QA/QC from the DEQ Laboratory. An additional 275-300 samples are planned for the spring of 2017.

The program analyzes for 78 currently registered pesticides, 43 non-registered pesticides, and 11 pesticide metabolites. Non-registered pesticides include those previously prohibited from use by EPA or not approved for use in Oregon by the Department of Agriculture.

Due to the fact that samples results from the final quarter of the current biennium have not yet been collected, a comparison of water quality to the previous biennium is not yet possible. However, as an interim measure, a comparison of year one of the 2013-15 biennium with year one of the 2015-17 biennium can provide an indication of program effectiveness.

This comparison indicates a overall decrease in the frequency of detection for the most commonly detected pesticides across all PSP watersheds. The exception to this is the detections of 2,4-D for which the frequency of detection increased during the 2015 sampling period. Detections of AMPA, Glyphosate, and Metsulfuron-Methyl only appear for 2015 when analysis of these compounds began.

Figure Two: Comparison in Frequency of Pesticide Detections, 2013 and 2015

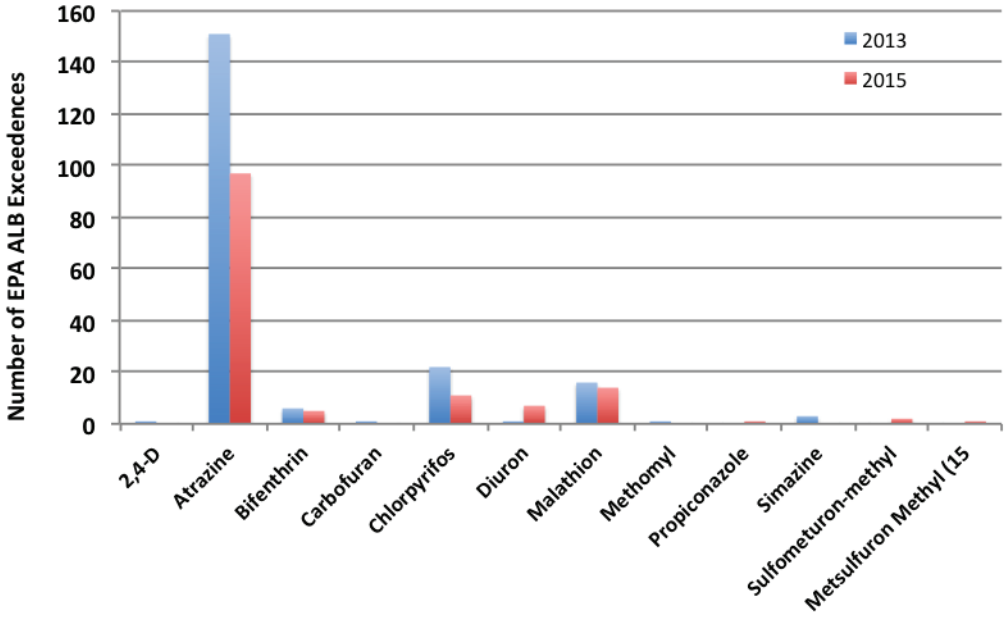


Note: AMPA, Glyphosate, and Metsulfuron Methyl were not analyzed in 2013

Water quality results indicate the number of detected pesticides exceeding an EPA aquatic life benchmark declined in 2015 (138) from that seen in the 2013 (202) samples. The exception to that trend is displayed for the herbicide Diuron (Metsulfuron-Methyl was not analyzed in 2013 therefore no trend is available).

Figure three presents only those pesticides detected for which there is an EPA Aquatic Life Benchmark (ALB). Not all pesticides presented in Figure two appear in Figure three due to the fact that an EPA ALB may not exist for that particular detected pesticide. In 2013 nine pesticides exceeded an ALB at least once. In 2015 that number declined to eight.

Figure Three: Number of ALB Exceedences, 2013 and 2015



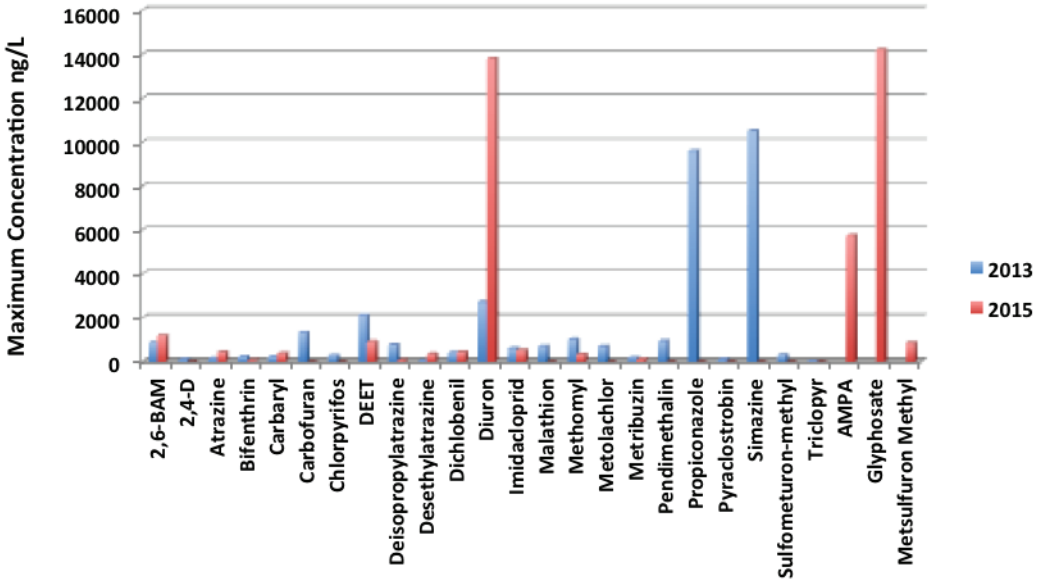
Note: Atrazine exceedences are based on 2014 updated EPA ALB of 1 ng/L

A comparison of the frequency of detection, number of exceedences and the maximum concentration provides a reasonable measure of the success of management activities put into place to address pesticide occurrences in monitored water bodies.

Overall the maximum concentration for pesticides detected during the 2015 sampling period was less than the maximum concentration for those same pesticides obtained during the 2013 sampling period (Figure Four). Exceptions to that were:

2,6-Dichlorobenzamide aka 2,6-BAM: A metabolite of the herbicide Dichlobenil
Atrazine: A herbicide used in a many applications
Carbaryl (Seven): Commonly used insecticide in home & garden
Desethylatrazine: A metabolite of herbicides Atrazine/Simazine
Dichlobenil: A herbicide used in many applications
Diuron: A herbicide used in non-ag and grass seed applications

Figure Four: Maximum Concentration Detected 2013 and 2015



Only in the case of Diuron was the 2015 maximum concentration found to be significantly above that documented in 2013. Diuron has been identified in seven of the nine PSP areas as a pesticide that will be of focus in the 2017-19 biennium.

The WQPMT conducted an analysis of all water quality results across all watersheds for the period 2010 through 2015 and compared results to criteria developed to assess which pesticide(s) are of greatest concern. This criterion considers toxicity, frequency of detection and other factors such as distribution of occurrence. Based on this analysis the top 10 pesticides of greatest concern in Oregon are presented in Table Two:

Table Two: Top 10 Pesticides of Concern in Oregon

Pesticide	Pesticide class	Common trade name
2,4-D	Herbicide	Barrage
Atrazine	Herbicide	AAtrex
Bifenthrin	Insecticide	Brigade
Chlorpyrifos	Insecticide	Lorsban, Dursban
Diazinon	Insecticide	Diazinon
Diuron	Herbicide	Karmex, Diuron
Imidacloprid	Insecticide	Gaucho
Malathion	Insecticide	Cythion
Sulfometuron-methyl	Herbicide	Oust
Simazine	Herbicide	Princep

The process by which pesticides are determined to be a "pesticide of concern" will be reviewed and if necessary modified by the WQPMT during the 2017-19 biennium. Based on this review it is likely that some pesticides will be removed while others may be added.

In summary, a comparison of pesticide data obtained in 2013 to that collected in 2015 indicates progress in reducing the frequency and magnitude of pesticides residues entering surface waters. The comparison also indicates that additional efforts are needed to address a limited number of specific pesticides that continue to be detected at a frequency and magnitude that may be detrimental to human health and aquatic life.

TECHNICAL ASSISTANCE GRANTS

During the 2015-17 biennium, the PSP Program funded 5 grant projects. These grants were competitive in nature and were selected for funding by the WQPMT. This was an increase of two additional projects over that funded during the 2013-15 biennium[2]. The project recipients were:

- Oregon State University for development and calibration of an established surface and groundwater model to predict the effects of land and pesticide use on water quality

[2]During the 2013-15 biennium the PSP Program did fund purchase of two pieces of pesticide spray equipment that are currently on loan to local Extension and SWCD partners to enhance grower education and outreach efforts.

- Oregon State University to develop and implement a training program for applicators of pesticides to increase proficiency in spray equipment calibration and develop a management tool to improve pesticide application activities

- Oregon State University to develop conservation biological control management plans to enhance the presence of beneficial insects as an alternative to pesticide use

- Northwest Center for Alternatives to Pesticides to develop education and outreach materials providing growers and the general public information on impacts to endangered salmon from pesticide management actions. This is focused on three PSP areas in Clackamas, Marion, and Yamhill Counties

- Columbia Gorge Fruit Growers to demonstrate the use and effectiveness of recently developed tools for monitoring natural enemies of pear psylla

The funds awarded to these projects totaled $165,188.77.

PARTNERSHIP ASSISTANCE GRANTS

Because of a significant decrease in federal Clean Water Act 319 funds (used to support water quality sample collection by PSP partners), the WQPMT moved (in 2016) to fill that gap with PSP technical assistant monies. These grants were established to not only provide funding for partners to continue to conduct the activities associated with physically collecting water quality samples but assist in allowing partners to enhance education and outreach and/or conduct activities that result in the reduction on pesticides in surface or groundwater. These grants have been met with a great deal of enthusiasm by PSP partner agencies. Examples of some of the activities now being conducted as a result of these grants are:

1) Establishment of surface water flow monitoring in the Eugene area to better understand the relationship between pesticide concentration and pesticide loading in streams.

2) Developments of a database system for use locally by the Pudding Watershed Council to better understand current and historical occurrences of pesticides. This will allow for more focused use of resources and enhance the potential for pesticide reductions in impacted water bodies.

3) Evaluation of basic hydrogeology in the Medford area to develop an enhanced understanding of the relationship between pesticide results in surface water and those discovered in recently completed groundwater studies conducted by DEQ.

4) Conduct enhanced data collection regarding pesticide and land use in support of a Oregon State University modeling project in the McMinnville area

5) Conduct enhanced education and outreach in rural and urban areas regarding pesticide use in the Walla Walla area. Also provide for funds to support maintenance of local weather station use to assist growers in decision-making regarding use of spray equipment in the area.

The total funds awarded to support these activities and provide support to two other PSP's for sample collection support is $41,822.00. At this time, the WQPMT plans to continue to make these "partner grants" available in the 2017-19 biennium.

DATA COMMUNICATION AND IN-KIND OUTREACH

Water Quality Pesticide Management Team members presented information about the PSP program at numerous forums throughout the state during the 2015-17 biennium. These included presentations at regional grower organizations, OSU continuing education programs, farm fairs, and other meetings dealing with pesticide management. In addition, members of the WQPMT regularly attend meetings of PSP partner agencies to provide technical assistance or advice. The purpose of these presentations is to increase awareness and catalyze stewardship actions.

Members of the WQPMT, present (generally twice a year) the results of water quality monitoring data to every designated PSP and pilot area. The purposes of these presentations are to provide interpretation of the data and assist the partners in the development of management actions that may be considered as a result of the water quality findings. These presentations also form the basis of any modifications to future monitoring schedules and locations.

During the summer of 2016, members of the WQPMT met with each PSP to begin the development of actions plans for the 2017-19 biennium. During these meetings an in-depth discussion regarding both past and current monitoring data and the actions taken based on this data was held. In collaboration with PSP partners an evaluation of the overall goals for each PSP was conducted and if necessary modified to reflect changing conditions. The need for additional technical assistance, new projects, funding, and waste pesticide collections was evaluated and following local review and input, an action plan for the 2017-19 biennium was developed.

WASTE PESTICIDE COLLECTION

The waste pesticide collection events continue to receive a significant amount of support from the PSP partners and the general public. Beginning with the 2017-19 biennium, the WQPMT will develop and have available a brief questionnaire for participants to provide comment on the program and how it may be improved. Those results will be compiled and posted on agencies web pages.

During the 2015-17 biennium, from July 2015 through February 2017, the PSP Program held 13 events and funded 3 additional events held by local stakeholder agencies. The results of these actions removed more than 130,000 lbs of unused or unusable pesticides from sensitive watersheds. Table Three provides information on participation and locations for events held during this time frame.

Table Three: Waste Pesticide Collection Activities 2015-17 Biennium

Location	Date	Pounds Collected	Participants
Klamath Falls	September 2015	2,526	8
Burns	October 2015	2,329	6
Ontario	October 2015	9,959	15
Grants Pass	March 2016	10,929	12
White City	March 2016	4,641	18
Pendleton	April 2016	6,246	11
Philomath	May 2016	17,000	21
Harrisburg	May 2016	7,200	18
Lakeview	June 2016	874	2
Roseburg	September 2016	1,963	5
Madras*	September 2016	344	1
Tillamook	October 2016	2,413	6
Clackamas*	October 2016	2,000	7
McMinnville	November 2016	47,784	48
Tri-County*	2016	13,824	34
Madras	February 2017	7,355	17

* Indicates events held by other agencies but funded through PSP Program

Significant totals for the biennium area:

1) Number of participants, 219 compared with 235 during the 2013-15 biennium.

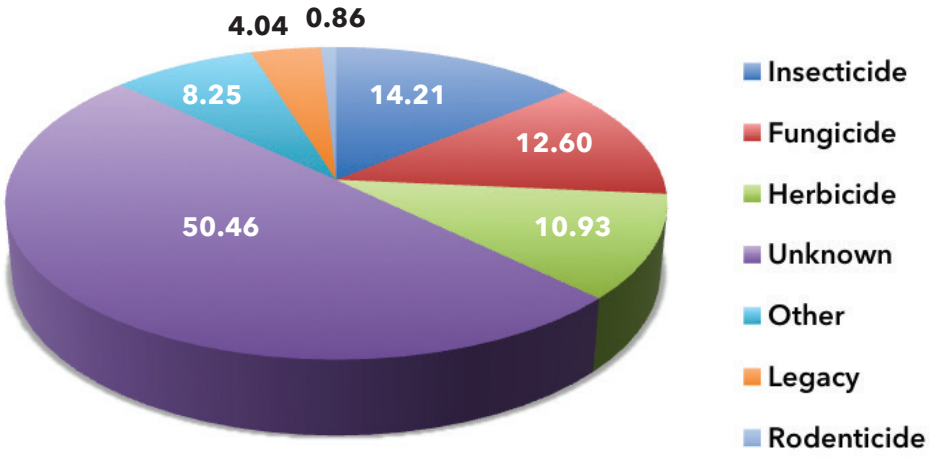
2) Total pounds collected: 137,387 compared with 145,616 during the 2013-15 biennium.

3) Total cost: Thus far the cost for events held during the 2015-17 biennium is approximately $197,000.00 with at least one additional event yet to be held. The average cost per event is $13,147.00; this is significantly less than those held during the previous biennium. An effort to coordinate with the Department of Environmental Qualities Household Hazardous Waste Collections allowed for contractor mobilization savings.

4) The number of collections conducted by the PSP program was increased by four over those held during the 2013-15 biennium in an attempt to expand service to areas not served by previously held collection events.

The majority of the materials collected at the events were classified as "unknowns". Unknowns may occur when pesticides labels were missing, or when they have been transferred to other containers making specific identification impossible.

Figure Four: Classification of Materials Collected during the 2015-17 Biennium
(Numbers in percent totals)



There also appears to be a substantial amount of material that was not documented on registration forms or was collected by participants at the last minute and brought to the events. In recognition of these possibilities, the WQPMT have strengthened protocols for future collection events to ensure the continued integrity of the program.

The program continues to collect pesticides that have been removed from trade sometimes for decades. These chemicals are termed as "legacy" compounds and chemicals such as DDT, Chlordane, Silvex, and Aldrin.

During the final event held in Madras, OR on February 2, 2017, of the approximately 7300 lbs of material collected eight percent was classed as legacy material. It is expected that as farm property ownership turns over this type of material will continue to be brought to the collection events for the foreseeable future.